UNCLASSIFIED

ROUTING AND RECORD SHEET

SUBJECT: (Optional)
GDIP Proposed Technology Coordination Staff

FROM	EXTENSION	NO.
ES/IR&DC 4S07		IR&DC 88-0008 STAT
		DATE: 31 May 1988

TO: (Officer designation, room number, and building)	DATE RECEIVED	DATE FORWARDED	OFFICER'S INITIALS	COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)
1. ICS Reg				CMTE 26-SR
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FORM 1-79 **610** USE PREVIOUS EDITIONS

SUBJECT: GDIP Proposed Technology Coordination Staff

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DCI/ICS/PPO/IR&DC: [redacted] 31 May 1988 STAT

The Director of Central Intelligence
Washington, D.C. 20505

Intelligence Research and Development Council

IR&DC 88-0008
31 May 1988

MEMORANDUM FOR: Members, Intelligence Research and Development Council

FROM: [redacted] STAT
Executive Secretary

SUBJECT: GDIP Proposed Technology Coordination Staff [redacted] STAT

1. Attached for your review please find a proposal from the Director of the General Defense Intelligence Program Staff (GDIP) for the establishment of a GDIP Technology Coordination Staff and an inquiry as to whether this function could be handled by the Council. [redacted] STAT

2. Please provide your comments for the Chairman's consideration, if you wish, to the Executive Secretary by 10 June. [redacted] STAT

Attachment
GDIP Technology Coordination Proposal

cc: Director, Defense Research and Engineering

All portions of this memorandum
are UNCLASSIFIED

GENERAL DEFENSE INTELLIGENCE PROGRAM STAFF

WASHINGTON, D.C. 20340-1025

U-244

26 May 1988

MEMORANDUM FOR THE CHAIRMAN, INTELLIGENCE RESEARCH AND DEVELOPMENT COUNCIL

SUBJECT: Technology Coordination

The GDIP needs a variety of technology to keep up with intelligence collection, processing, and dissemination requirements, and to improve efficiency and productivity. To keep track of technology and its use among GDIP units and activities, I asked Herb Kline, a GDIP consultant, to draft the enclosed concept for "GDIP Technology Coordination".

Unlike the other major NFIP components, GDIP diversity precludes a single, central R&D program office. We need a small element to coordinate R&D projects and maintain a data base of technology that already has been developed or is under development by other government agencies, industry, and academia. This element would:

-- Follow technology and catalog what is available off-the-shelf and what is under development.

-- Advise the Program Manager on R&D projects and proposals.

-- Coordinate executive agent agreements for R&D of common GDIP interest and projects of interest to both the GDIP and other programs.

-- Be the central technology reference office for the GDIP, including data on technology already on the shelf or under development.

Options for GDIP technology coordination included a suggestion from Charlie Hawkins that it be done by the Intelligence Research and Development Council. With this in mind, please review the enclosed concept paper. I would like to know by 15 June whether the IRDC can do all or a part of the job. I am concerned particularly with the Council's ability to respond during program and budget review to quick-turn-around evaluations for the Program Manager.

1 Enclosure a/s

Martin Hurwitz
Director

cc: Mr. John Stout,
Exec Secy, IRDC

A Concept for the Implementation of Technology Coordination Services Within the General Defense Intelligence Program

Introduction:

The ability to leverage technical capabilities to obtain better R&D outcomes in support of intelligence system acquisition is significant to cost-effective planning, programming, and budgeting. This paper provides a concept for implementing this idea within the GDIP. A small central staff will be used to establish and maintain leverage by performing technology coordination services on a program-wide basis for military and civilian organizations having basic and applied R&D responsibilities. The paper defines a methodology for conducting technology coordination, and it provides an organizational setting for the technology coordination staff.

Fundamental Objectives

A fundamental objective of GDIP R&D activity is to establish conditions for technical design such that the operational effectiveness of new and improved systems can be sustained over the long term. The fundamental objective of technology coordination is to strengthen the iterative process GDIP R&D organizations follow to search, evaluate, and match technology attributes to project requirements. The results of technology coordination will be reflected in GDIP program guidance, service and DIA management of R&D programs, and in policy and procedures applicable to the system acquisition process. The ultimate payoff is a reduction in the likelihood of investing in R&D directions which produce technically substandard system designs, e. g. designs whose required system

capabilities rapidly erode in sophisticated mission environments and in operationally complex situations.

Technology Coordination Defined

Technology coordination is defined as the identification, interpretation and distribution of selected topics in science and engineering to GDIP organizations conducting system R&D. The definition includes staff support and information handling functions. The latter range from the creation and maintenance of a centralized technology data base, R&D project and program monitoring, and sponsorship of formal symposia to promote dialogues among scientists and engineers from GDIP R&D organizations, those in other government agencies, private industry, and various professional societies.

Technology coordination excludes actual design of systems. It has no direct authority to approve the plans, projects, programs and budgets of R&D components of the military services and DIA. However, their activities will be monitored to support the formulation, defense, and execution of the GDIP. Within these processes, technology coordination will make recommendations to the Program Manager in cases where: (1) technology variables play a key role in resource allocation problems and issues, and (2) where an independent technical opinion is required in connection with the achievement of a required technical capability.

Leverage is the key operational term in this definition. Leverage cannot be introduced and effectively sustained if the scope of technical topics addressed is unconstrained. The coordination function would then equate to an information clearing house without feasible operating boundaries. Therefore, technology coordination will address as its primary set of "technology aggregates" only new and emerging areas of science and engineering which have passed

the "proof-of-principle" stage. Relevant examples are listed in Table 1. Their orientation highlights the fact that leverage is principally concerned with impacting near-term and mid-term (execution through FYDP years)applications of science and engineering to GDIP R&D problem solving. Areas of basic research, where problem applications are not entirely clear, are of secondary significance.

Prime Technology Aggregates
Table 1

• Very High Speed Integrated Circuits (VHSIC)
• Robotic Vision
• Computer Parallel Processing
• Decision Logic and Allocation with Man-Machine Interaction
• High Temperature Structural Materials
• Portable Power Supplies
• Speech Recognition and Natural Language Understanding
• Electro-optic Technology
• Advanced Software Generation
• Signal Processing Technology
• Non-silicon Electronic Materials
• Reduced Signature Technology
• Simulation Technology and Training

Operating Methodology

Leverage is based on the assumption that each prime technology aggregate can be decomposed to form a typology of information subsets which "fits" current areas of GDIP R&D investigation. Tables

2A and 2B illustrate how the decomposition might appear at the highest two levels of the typology. Each R&D application listed equates to an information topic against which a technology data base could be created. An R&D organization would use a list of these applications as "addresses" for information inquiry. In this way, specific needs -- developed at the level of projects -- can become coupled to data bases in the typology structure.

Aggregate: Robotic Vision

Table 2A

Information Subsets:	R&D Application
• Automated Image Recognition	• Real Time Feature Extraction
• Automated Target Recognition	• Surveillance/Reconnaissance
• Vision for Robotic Systems	• Remote Sensing
•	•
•	•
• Artificial Neural Systems	• Technical Security
•	•

Aggregate: Portable Power Supplies

Table 2B

Information Subsets	R&D Application
• Conducting Polymers	• Platform detectability
• Prime Power	• Facility Back-up Power
• Long lived Batteries	• Agent Communications
•	•
•	•
•	•
• Inexpensive Photovoltaic Cells	• Space Operations
•	•

Two conditions are necessary to implement this methodology. External sources of technical information relevant to the approved list of technology aggregates need to be established. Second, the data bases modifying the R&D application areas must be automated. Both of these conditions are discussed below.

External Information Sources

A combination of government and private entities can be used as sources of technical information. A recommended list is provided in Table 3. It is important that the number of such sources be kept small. Otherwise, the administration and analysis of information inputs will be difficult to control.

Studies and reports, published by the government organizations listed, provide a ready made source of information for entry and update of each R&D applications data base. The IR&D programs of private industry are easily obtained from DoD sponsors. Each of the professional societies listed sponsor symposia in various technical areas and often publish their proceedings. Finally, a GDIP technology symposium could be conducted to address technology areas of general interest to the R&D organizations. This activity could be modeled after the annual Research and Engineering Symposium conducted by NSA, wherein scientists and engineers from R Group and the SIGINT industry meet to identify R&D needs in selected areas of the CCP and TCP.

Information Sources

Table 3

Government		Private	
DOD	Non-DOD	Industry	Prof. Societies
DSB	National Labs	IR&D	SASA
DDR&E	Academy of Science	FCRCs	AFCEA
DARPA	National Sci. Foundation	Research Labs	ADPA
NSA/R	CIA/DDS&T		
	DCI/R&D Committee		

Automation of Information Holdings

Automation is an organized and highly structured way for the central staff to develop typologies for the prime technology aggregates and to organize and catalog information holdings for each R&D application. IDHS communications should be established between each R&D organization and the central data base to permit information query, and retrieval, and to support related functions such as bulletin boards and message exchange among network members.

Central Staff Structure

DIA should be designated as the executive agent for GDIP technology coordination. The central staff should be established within an existing DIA organization. The host organization should be chosen such that: (1) interaction with entities across the R&D

structure is simple to accomplish, and (2) a sound basis for professional association with the entities listed in Table 3 can be formally established. The recommendation is for the Central staff to be attached to the Chairman of the DIA Scientific Advisory Committee. This arrangement provides the degree of freedom necessary to escape constraints which line organizations might impose. It promotes access to the GDIP Program Manager, to the managers of the R&D organizations who are the "customers," of technology coordination. It provides the necessary amount of "status" to sustain interaction with officials in the private sector, other government agencies, and the professional societies. Finally, it directly facilitates interaction with the GDIP staff.

The central staff should be consist of at least five technically oriented professionals. The director should be a senior scientist knowledgeable of GDIP R&D programs, their problem areas and objectives. Candidates for staff billets should be selected from military R&D laboratories, GDIP S&T Centers, and from DIA Directorates: e.g., RS, DT, and DB. They should have current qualifications in science and engineering career fields, and each should have have at least 7 to 10 years of intelligence system R&D experience. Assignment to the central staff should not be made on the basis of technical specialty. The emphasis should be upon finding staff with variable technical backgrounds. coordination should exist within the staff as well as without. Average grade level of GS 13 and 14, or rank of major and LtCol, is considered appropriate.